

REMARKS

The present application was filed on February 28, 2002 with claims 1-18.

In this response, Applicants have canceled claims 4, 10 and 15, and have amended claims 1, 5, 7, 12-14, 16 and 17.

Claims 1-3, 5-9, 11-14 and 16-18 remain pending after the foregoing amendments. Claims 1 and 12 are the independent claims.

Applicants respectfully request reconsideration of the present application in view of the above amendments and the following remarks.

The Examiner has rejected claims 1-18 under 35 U.S.C. §112, second paragraph, as indefinite. Applicants respectfully traverse the rejection. Nonetheless, in order to expedite the prosecution, Applicants have amended independent claims 1 and 12 to clarify the configuration of the laser cavity, pump source, and combiner as suggested by the Examiner.

Claims 1-8 and 10-17 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,594,747 (hereinafter “Ball”). Applicants traverse this rejection on the ground that the Ball reference fails to teach or suggest a combiner coupled within a laser cavity of an optical fiber laser device and configured to introduce pump light from a pump source into the laser cavity as set forth in independent claims 1 and 12.

For example, with reference to FIG. 1 of Ball, it can be seen that the WDM combiners 28 and 60, which are coupled to respective pump sources 22 and 54, are both arranged external to the laser cavity 18 defined by the gratings 14 and 16. See Ball at column 3, lines 43-54, column 4, lines 16-24, and column 4, line 62 to column 5, line 2. The combiners 200 and 214 in FIG. 4 of Ball are similarly positioned external to the laser cavity 18 defined by gratings 14 and 16. Ball therefore fails to anticipate the present invention as set forth in claims 1 and 12.

Claims 9 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ball in view of U.S. Patent No. 6,370,180 (hereinafter “Zentano”). Applicants respectfully traverse this rejection. The Zentano reference fails to supplement the above-noted fundamental deficiency of the Ball reference. Therefore, even if one assumes that the references are combinable, their combined disclosures fail to meet the claim limitations.

In view of the above, Applicants believe that claims 1-3, 5-9, 11-14 and 16-18 as amended are in condition for allowance, and respectfully request the withdrawal of the §112, §102(b) and §103(a) rejections.

A marked-up version of the changes made by the present amendment is attached.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

1. (Amended) An optical fiber laser comprising:

a laser cavity defined by first and second reflective devices, the laser cavity comprising an optical fiber lasing medium coupled between the first and second reflective devices;

a pump source; and

a combiner having [a first side, a second side, and an input port] at least first, second and third ports, wherein an output of the pump source is operatively coupled to the [input] first port of the combiner, and the combiner is coupled at its [first and second sides] second and third ports within the laser cavity:

the combiner being configured to couple pump light from the pump source into the laser cavity.

Claim 4 has been canceled.

5. (Amended) The optical fiber laser as recited in claim [4] 1, wherein at least one of the first and second [reflector] reflective devices comprises a fiber Bragg grating.

7. (Amended) The optical fiber laser as recited in claim [4] 1, wherein the first and second reflective devices comprise at least one of a dielectric film mirror, an interference filter, a broad metal mirror, and a polished fiber end.

Claim 10 has been canceled.

12. (Amended) A method for combining laser light with pump light in an optical fiber laser device having a laser cavity defined by first and second reflective devices, the laser cavity comprising an optical fiber lasing medium coupled between the first and second reflective devices, the method comprising the steps of:

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positioning a [pump] combiner within [a] the laser cavity, the combiner having at least first, second and third ports, the combiner being positioned so as to be coupled at its second and third ports within the laser cavity; and

coupling a pump source for exciting the lasing medium to [an input] the first port of the combiner;

the combiner being configured to couple pump light from the pump source into the laser cavity.

13. (Amended) The method as recited in claim 12, wherein the lasing medium comprises a cladding pumped [laser] fiber.

14. (Amended) The method as recited in claim 13, wherein the cladding pumped [laser] fiber includes a rare earth doped core.

Claim 15 has been canceled.

16. (Amended) The method as recited in claim [15] 12, wherein at least one of the first and second [reflector] reflective devices has a low index coating formed thereon.

17. (Amended) The method as recited in claim 12, wherein the lasing medium comprises a single-mode [laser] fiber.